

REMARKS

The Advisory Action of February 6, 2004 was received and carefully reviewed. Claims 1-3, 9, 13 and 14 are amended herein, of which claims 1-3, 13 and 14 are independent. As a result, claims 1-14 remain pending in the instant application. Examination on the merits is respectfully requested.

Addressing the pending rejections, claims 1-3, 6-8, and 11 are rejected under 35 U.S.C. 103(a) over Silver, in view of Yamazaki; and claims 9-10 and 12-14 are rejected under 35 U.S.C. 103(a) over Silver, in view of Yamazaki and Miyasaka. These rejections are respectfully traversed for the reasons advanced in detail in the Request for Reconsideration filed December 31, 2003 (those arguments incorporated herein by reference), as well as for the reasons advanced below.

Claim 1 of the present invention is directed to a method of manufacturing a semiconductor device comprising the step of ion-doping an impurity element into a channel region, wherein said impurity element imparts n-type conductivity or p-type conductivity to said semiconductor film, wherein a concentration of said impurity element is in the range from 1×10^{15} to 5×10^{17} atoms/cm³ in said semiconductor film after the ion-doping step, and wherein a concentration of carbon is at 3×10^{17} atoms/cm³ or less in said semiconductor film after the step of ion-doping.

Independent claim 2 parallels claim 1 and recites a concentration of nitride at 1×10^{17} atoms/cm³ or less in the semiconductor film after the step of ion-doping.

Independent claim 3 parallels claim 1 and recites a concentration of oxygen at 3×10^{17} atoms/cm³ or less in the semiconductor film after the step of ion-doping.

Independent claim 13 parallels claim 1 and recites a concentration of hydrogen at 1×10^{19} atoms/cm³ or less in the semiconductor film after the step of ion-doping.

Claim 14 parallels claim 1 and recites a source material gas containing said impurity element diluted with hydrogen to the concentration in the range from 0.5% to 5, i.e., 0.5-5% diborane.

Further, the present invention is directed to a method of manufacturing a semiconductor device including the steps of forming a semiconductor film over a substrate, forming an insulating film over the semiconductor film and ion-doping an impurity element

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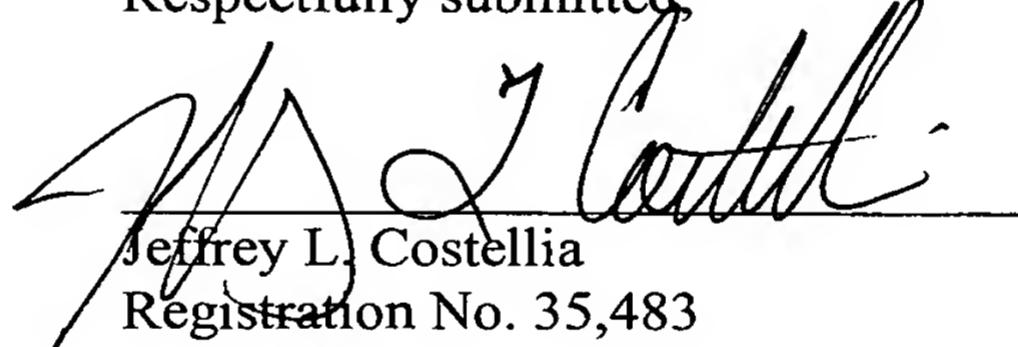
into a channel region of the semiconductor film through the insulating film. Claims 1-3, 13 and 14 are amended to include this feature of the invention. Support for these features are provided on page 18, line 24- page 19, line 4 of the specification.

For the reasons advanced in the Request for Reconsideration filed on December 31, 2003, Applicants contend that the combination proposed by the Examiner still fails to disclose the features of the claimed invention. Further, although Silver may disclose ion-doping an impurity into a channel region, it does not appear to disclose ion doping through an insulating film. The secondary references to Yamazaki and Miyasaka also appear to fail to overcome this deficiency. Consequently, the rejections of record should now be overcome.

Claim 9 is also amended herein to delete duplicate language therein.

If a conference would expedite prosecution of the instant application, the Examiner is hereby invited to telephone the undersigned to arrange such a conference.

Respectfully submitted,



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